

JOURNAL BOX

EDITORIAL.

Notwithstanding all good intentions, Journal is further behind than ever. To keep the record straight, there will only be five issues this year, the July-Aug-Sept issue and the Oct-Nov-Dec issue will be the last two.

Perhaps Jim Fainges was right, no-one has said anything to the contrary. Anyhow, the way articles are flooding in at present, it looks like I will have to write the whole Oct/Dec Journal myself!

Talking about time, or the lack of it, I hope that everyone is about to send in their renewals, as they will be due by the time you receive this issue.

You should be well on the way with your entries for next year's Competitions also, entries close January, and that is not too far away now.

Finally, may I leave you with this thought - the best way to avoid making stupid comments is not to make any.

Rex Little.

ON THE COVER

Up mid-day flyer descending
Hawk Mount - June 1969

Photo by Kevin Brown.

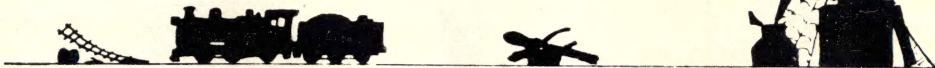
Contents.

Journal Box	97
Secretary's Desk	98
AMRA Track Gauge	99
Application of model railway standards - Part 3 - Wheelsets	100
S 542 Bakewell	105
One day or A dream come true	108
Plan - W.A.G.R. class W.S.W. - Crew living van	112
Scratch building for very beginners (motive power)	114
St. Eric's Railway System - Developing ideas - Part C	116
AMRA Balance sheet	117
Branch notes	120
News from other clubs	124
West Rail Centre - Reprint from W.A.G.R. Newsletter	126

Credits.

Editor	Rex Little, P.O. Box 46, Nunawading, Vic., 3131
Publisher	Maurie McKinnon, 26 Bondi Avenue Frankston, Vic. 3199.
Artwork	Bill Morehouse
Cover Design	Sentinel-Times
Typing	Dot Treseder
Printing	Sentinel Times Publishing 8 Radovik St. Korumburra, Vic. 3950.
Federal Secretary	Norm Read 3 Augusta St. Strathfield, N.S.W. 2135.
Federal Treasurer	Keith Wilcox 12 Sullivan St Blacktown, N.S.W. 2143.
Federal Registrar	June Dunn 25 Napoleon St Rosebery, N.S.W. 2108.
Advertising Manager	Stuart Westerman 10 Gardenia Cres. Cheltenham, Vic. 3191.

THE SECRETARY'S DESK



This is the time of year, when we make our annual appeal to return the account forms along with your renewal subscription. This is really a standard practice on paying any account what so ever. The return of these forms does assist in the checking of renewals, and your co-operation in this matter will be appreciated by the Registrar.

Some time back I mentioned that our standards were being revised and rechecked, this has all been completed and a new booklet printed so any member sufficiently interested, can obtain a copy from me, by application.

Also in conjunction with these updated wheel and track standards, we are having a gauge manufactured, to fine tolerance to suit the above standards, a diagram of the gauge can be seen in this issue.

These gauges will be available also from me at a very good figure of \$1.25 each, postage extra. Note these are for HO, other gauges could be catered for if sufficient interest is shown.

I have visited a few exhibitions recently and what struck me with some of the layouts was poor operation, e.g. frequent derailments or else locos trying to break the sound barrier, or very little variation in train sets. The sight of a loco on its own careering around, with sundry pieces of rolling stock lying around the country side, to me, does not do much to further the image of the hobby. Admittedly the younger generation seem to lap it up, but these same young ones will watch

with keen interest the next layout which is being operated in a railway like manner.

The point arises, at an exhibition do we want to entertain or stimulate an interest that will grow and lead to others taking up this hobby, which you must admit has a lot going for it.

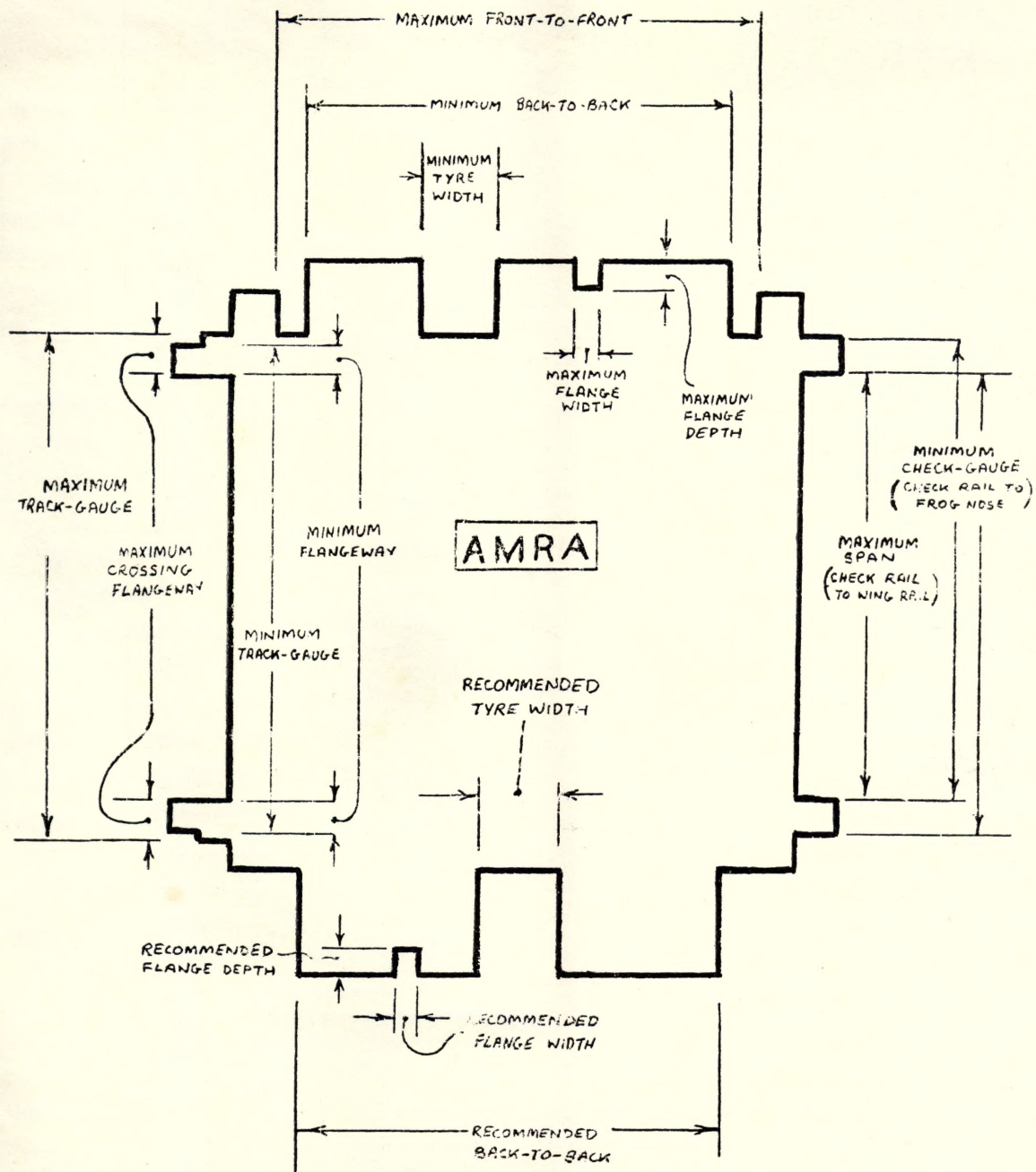
Some say it costs a bit, well I guess it would if one just buys everything instead of trying ones hand at building something out of bits and pieces or even trying to assemble a kit. It is just a case of making up ones mind to have a go at something, the first attempt may not be a prizewinner, but there is a satisfaction in having made the first step. I will always remember a fellow who had never worked in metal and who had never tried building a loco, who on his first attempt produced a loco that was in a prize winning class. His subsequent productions were also first class. May be we may see some results from you in the next competitions at the end of 77.

Norm Read.
Hon. Sec.

NOTICE

This publication accepts no responsibility for the accuracy or reliability of articles or advertising contained herein, statements made or opinions expressed in papers or discussions, nor do we necessarily subscribe to the views expressed by the contributors.

Neither is any guarantee implied or expressed as to good conduct or practice of advertisers contained herein. This publication reserves at all times the right to refuse acceptance to all matter considered unsatisfactory for publication.



APPLICATION OF MODEL RAILWAY STANDARDS

PART 3. WHEELSETS

By P.J. Betts.

Parts 1 and 2 of this series dealt with the needs for standards and application of standards where track-work is concerned. When buying track-work it is quite reasonable to assume that the track-gauge is correct within proper limits without having to measure it, for practically all brands. The dimensions of wheelsets however particularly the back-to-back dimensions, vary widely from one brand to another and often by appreciable amounts with in the one brand. The practical side of wheelset standards is therefore of great importance.

As in the previous articles in this series, it is 16.5mm gauge in which the author is particularly concerned.

Tools.

If it is intended to take standardisation seriously, any item of rolling stock that is intended to be used should have its wheelset back-to-back dimensions and flange width dimensions known. By far the most convenient tool for measuring these dimensions is the vernier callipers. If the reader has no access to one of these instruments and has no intention of obtaining one, then he may as well read no further. It is recommended that callipers in the "Mituteye" range are bought. These are of a quality second to none yet by no means the most expensive. The callipers should of course be calibrated in millimetres. Cheap callipers that can be bought in the local hardware shop are next to useless for the applications to be described.

It is always useful to make some modification to the jaws of vernier callipers. For some inexplicable reason, the jaws always have a rounded

shape which is such that certain track work dimensions are difficult to measure. Fig. 1. shows how the jaws should be ground or filed to achieve this improvement.

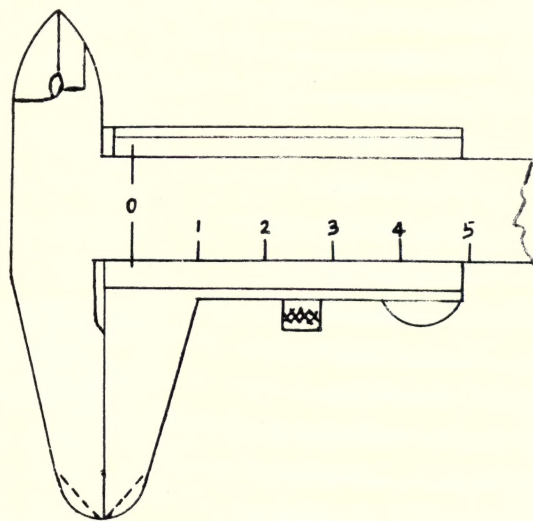


Fig 1. Vernier Callipers.

The dotted lines show where metal may be ground away from the rounded jaws to make them more suitable for measuring pointwork dimensions.

In most cases where alteration of wheels is necessary, they used to be turned up on a lathe. Very few modellers have access to a lathe or could justify the expense of buying one. There are only two lathes readily available in the modelling field, these are the "Unimat" and the "Sherline". At the time of writing each costs very approximately \$200 with a few necessary accessories and although the individual may not be able to afford this, the club he belongs to might. Apart from

the peripheral benefit of members being able to turn up components for their models, a modeller's lathe would be of frequent benefits to club members for trueing up and improving the dimensions and hence the performance of their wheelsets. It is recommended that any model railway club with a healthy bank balance give serious consideration to purchasing a modeller's lathe.

If access to a lathe is to be had, a very useful device used in conjunction with turning wheels is the split collet. Such a device will enable wheelsets to be held by their axles while being turned. The best way to turn a wheel is by its own axle and if both wheels are immovable from their axle, using a split collet is the only way. A separate split collet will be required for each axle size and of course such a special device will have to be hand made. A sketch of split collet similar to the ones used by the author is shown in Fig. 2.

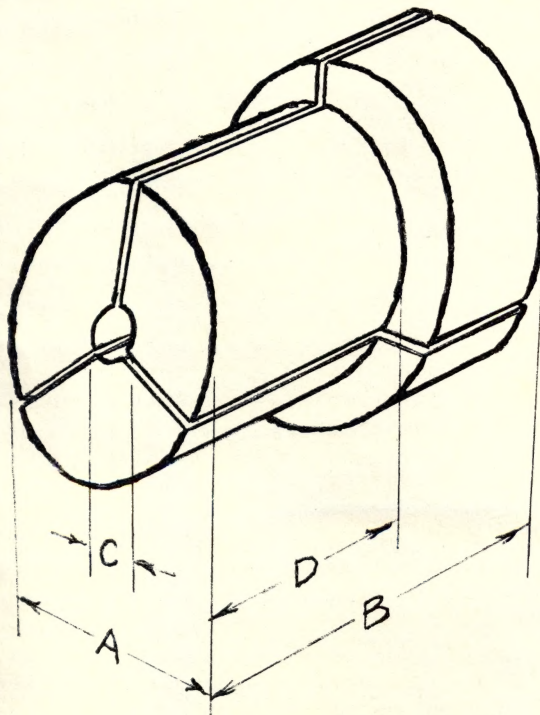


Fig 2. Split Collet.

Note that dimension "A" must be larger than the largest diameter of wheel to be turned; "B" must be smaller than the least back-to-back to be handled; "C" is the axle diameter; and "D" should be no more than 8mm if for use with a modeller's lathe.

Back-to-back.

The back-to-back dimension of wheel sets is an important parameter. If it is set too narrow, this will become immediately obvious when the vehicle fails to negotiate a set of points. A myth has developed in model railway circles that the back-to-back dimension in 16.5mm gauge must be 14.5mm and "spot on". An analysis of all the clearance values associated with model railway standards suggests that 14.4 mm is a better dimension to aim at, and far from needing to be spot on, a tolerance of at least + or - 0.15mm may be accepted in conjunction with AMRA recommended effective flange width of 0.7mm. If narrower flanges are used a greater overall tolerance may be acceptable and vice versa.

If wheelsets are purchased which are found to have back-to-back dimensions less than the limiting dimensions specified in the 1976 issue of A.M.R.A. standards, the first consideration should be to move the wheels out on their axles. If the wheels are immovable then they will have to be turned on a lathe and have material skimmed off from their backs. A split collet is not needed for this as the wheel may be held by its tread. As a desperate measure, material could be filed off.

If wheels are moved on their axles, always fix them with Araldite after they have been correctly set. Do not rashly turn material off the backs of wheels since this will reduce the tyre width, which in itself may cause problems if this dimension becomes less than the minimum specified in the standards.

Front-to-front.

The effective front-to-front dimension of the flanges on wheelsets

(sometimes referred to as the wheel-gauge) is of vital importance. So obsessed have manufacturers and commentators been with back-to-back, and nothing but back-to-back, that non-sensical situations arise where back-to-back dimensions of up to 14.6 mm have been incorporated with flanges that have an effective width of up to 0.9mm. Lack of clearance between the fronts of the flanges and the track results in derailment whenever an appreciable track misalignment occurs, such as at rail joints or the tops of point blades. More derailments occur in model railways due to lack of front-to-front clearance than for any other reason. A.M.R.A. standards stipulate a maximum effective front-to-front dimension in 16.5mm gauge of 16.1mm.

If this maximum dimension is exceeded, then the same treatment will be necessary as described in the back-to-back section. In this case, of course material will have to be taken off the fronts of the flanges, and while doing this care should be taken not to spoil the flange profile.

Back-to-front.

The maximum dimension of the back of one flange to the effective front of the opposite flange (sometimes referred to as the wheelset check-gauge) is also important. If this dimension is made too large, the check rail at a rail crossing will not be able to restrain the front of the flange from hitting the frog nose and derailment may occur. In one respect this dimension is not critical, since when a train is negotiating the straight route of a point, there are no side forces to pull the wheel onto the frog nose, and when a train is negotiating the curved route of pointwork, the tractive pull on the vehicle has a sideways component that is always tending to keep the wheel flanges well away from the frog nose, and hence rendering the check-gauge dimension of little importance. If the vehicles are running at high speed, centrifugal

force may counteract the horizontal component of the tractive force and frog hitting may then occur. This natural tendency for wheel sets to avoid hitting frog noses is the reason why some commentators are able to claim that fine scale wheel sets have worked with perfect reliability through universal points. This may have been true when all trains were run at sober speeds with the loco hauling (pulling) but if the loco had been propelling (pushing) e.g. a shunting operation, or had the train decelerated suddenly while being hauled, the normal self-avoiding forces would be reversed, and the results would probably have been quite different.

The effective back-to-front dimension is one that is difficult to directly measure. It is probably easiest, and most accurate to measure the back-to-back and effective flange width dimensions separately, and add the two together. Any alteration of the back-to-front would be by the same means as that of the front-to-front.

Flange Profiles.

The flanges that appear on most model railways wheels fall into one of two categories. These may be described as those which in profile are more or less rectangular, with or without rounded corners which have been designed by someone with no knowledge of the many functions of a flange; and those which in profile are more or less scaled enlargements of the prototype flanges. The flanges that fall into these categories, all fall short in performance from what might be achieved from a flange designed from first principles for model railway conditions.

Although the prototype flange, or a slightly enlarged depiction of it, may look very nice, it is not necessarily the best performer. The only commercial flange familiar to the author, which is clearly designed for good performance alone, is the N.E.M. or that found on models of continental

manufacture. This flange however, is very ugly in appearance. Flanges which are very good in appearance are the RP 25 and to a lesser extent those found on Jackson wheels. These flanges however, perform poorly on trackwork that is less than very well aligned.

What is needed by the average modeller, as opposed to the mad keen operator on one hand or the perfectionist on the other, is a flange combining adequate reliable performance and acceptable appearance. Such a flange profile has been designed and is recommended in the 1976 edition of AMRA standards. It is recommended that any one who has the equipment to do so, alters or makes new flanges to this profile, (see Fig. 3.)

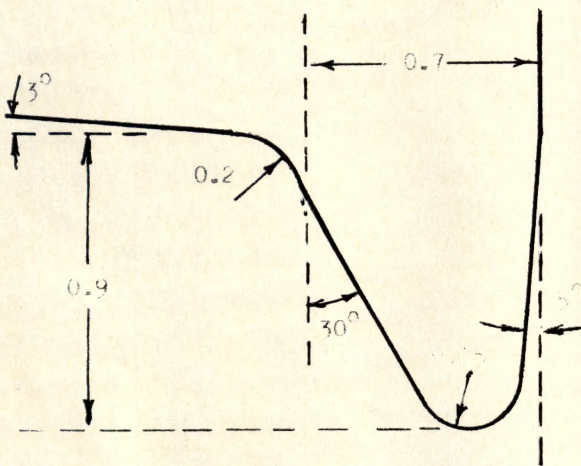


Fig 3. A.M.R.A. recommended flange profile for 16.5mm gauge.

(dimensions in millimetres).

Commercial Wheelsets.

Many wheels that are commercially made are slightly out of round on their axles. It is always worth trueing wheels up in a lathe, providing of course the lathe itself runs true.

"Lima" HO wheelsets normally come with a back-to-back dimension of 14.0 mm. Even if it is not possible to remove these wheelsets from their bogies

they can be made to work with reasonable reliability through points made to A.M.R.A. standards, if the backs of the flanges are heavily tapered with a file. Their appearance can be improved by rounding the nose. Again this can be done with a file.

"Jackson" wheelsets normally come with a back-to-back dimension of between 14.5mm & 14.6mm and an effective front-to-front of up to 16.3mm. These wheelsets can be greatly improved in performance by re-machining their flanges to the A.M.R.A. recommended profile and then moving their wheels in on their axles to a back-to-back of 14.4mm. If no lathe is available considerable improvement can still be achieved by setting the back-to-back in to as narrow as 14.3mm, and hence ensuring that the front-to-front is no more than 16.1mm.

"Triang-Hornby" wheelsets of the pin-point axle type can be removed from their vehicles quite easily, and the wheels easily pulled off their axles.

The simplest way of altering these wheels is to lay them on their backs on a file and rub their backs down until their flange width is 0.7 mm. The sharp nose that the flange will have attained from this operation can be rounded with a file. Finally the wheels should be replaced on their axles using Araldite to secure them, and set to a back-to-back of 14.4mm.

Wheelsets which incorporate the "RP 25" tyre profile tend to suffer from the same defects as Jackson wheelsets, in that their effective front-to-front dimensions are on the high side.

If the individual wishes to retain the excellent appearance of this profile and hence not to re-machine the flange, the best performance will be obtained if the back-to-back is reduced to the minimum that the standards will permit.

There are many other commercial wheelsets not mentioned here, but in all of them the general principles convey-

ed above will apply. If in a particular case, after all efforts, wheelsets are still found to have dimensions outside the standard limits, it does not necessarily mean that performance will be bad or that the items should be discarded. In all cases however, the nearer the recommended dimensions can be approached the better should be the performance.

Measurements.

An important and frequently ignored facet of all engineering is the errors that occur in measuring processes. No measurement can be "spot on" perfect, whether it be made with a wooden ruler or interferometer. Even if the highest quality vernier callipers were used by an expert, there would be probable errors due to the following:

1. The calibration of the instrument, up to + or - 0.01mm.
2. The reading of the instrument, up to + or - 0.01mm.
3. The setting of the instrument, up to + or - 0.02mm.

Average callipers in the hands of the average modeller, would result in probable errors appreciably greater than those listed, although the three components of measuring error would not necessarily all be positive. They may cancel each other out, but they might not. What the author is trying to illustrate is that an allowance for the measuring process must always be made when deciding whether or not a dimension is outside the limits specified in a standards specification.

For instance if it is intended to set the back-to-back spacing as close as possible to the lower limit specified in the standards (14.25mm in H0), and it is estimated that the best accuracy to which the measurement can be made is 0.05mm, then it should be attempted to set the spacing at 14.30mm. For those who find this a little beyond them, it should be pointed out that the compilers of the 1976 edition of A.M.R.A. standards have taken all these

and other probable errors into account when listing the recommended dimensions.

All that the average model engineer has to do is to aim for what is recommended.

Conclusion.

It is hoped that this series of articles will at least have brought standards to the attention of all readers. It is further hoped that at least a fair majority of readers will wish to do something about adopting track and wheelset standards. Again it is stressed that every modeller should have access to reasonable quality vernier callipers and a modeller's lathe. Not necessarily ownership but access and what could be more convenient than his club giving his access.

It is unfortunately human nature to think that nothing one owns could be anything but the best. An engineer's biggest problems are human ones rather than technical ones. If this author has done nothing else other than to convince a few individuals of this then his efforts will have been worthwhile.

FOR SALE

Back issues of Journals are available from the Registrar, 26 Napoleon Street, Rosebery, N.S.W., 2018. Price 30c per copy plus postage,

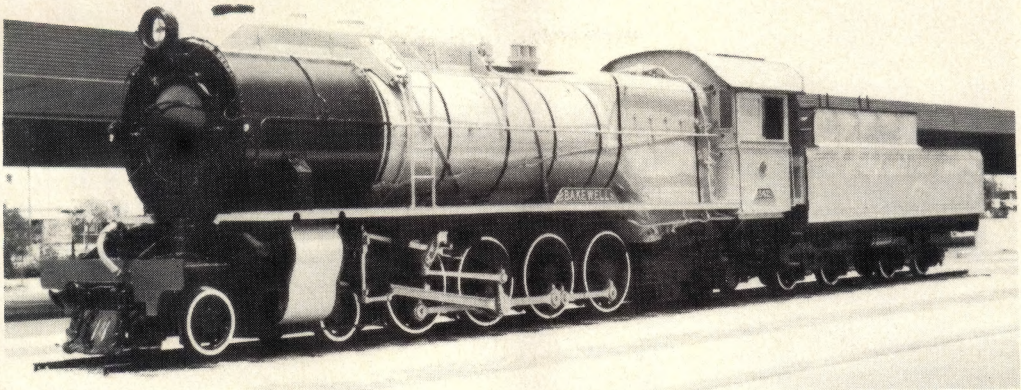
xxxxxxxxxxxxxxxxxxxxxx

Please enclose a stamped addressed envelope with mail orders.

A.M.R.A. Tie Bars — Silver	\$1.00 each
Gold	\$1.25 each
A.M.R.A. Cuff Links	\$1.50 pair
from the Federal Treasurer,	

S 542 BAKEWELL

By G.R. Watson.



The S class locomotive which now resides outside the new Westrail centre, earned this distinction by being a member of the last class of steam locomotives to be designed and built at the department's workshops at Midland.

The class numbered ten in all, and being of the 4-8-2 "mountain" type, they were all named after well known West Australian "mountains" ?? This particular locomotive is S 542 and carries the name "Bakewell".

These locomotives were constructed between the years of 1943 and 1947, the last of the class "Hardie" entering service in November 1947.

At the time of their introduction, they were the heaviest locomotives on the system, and were intended to handle the increasing goods traffic over the Darling Ranges, between Fremantle and Northam.

"Bakewell" was placed in traffic on June 26th, 1943 and ran half a million miles before it was withdrawn from service and written off in June 1971.

The locomotive has been painted up in its original grey and black livery, before going on permanent display, but spent many years in the standard W.A.G. R. Larch green and black colour scheme.

It weighed 126 tons in working order and carried 5,000 gallons of water, 7 tons of coal and was capable of hauling 1,200 tons over some sections of track.

Boiler pressure	200 p.s.i.
Grate area	40 sq.ft.
Heating surface-	
evaporative	1,673 sq.ft.
superheat	448 sq.ft.
Cylinders (2)	19" diam. x 24" stroke.
Coupled wheel dia.	4 feet.
Weight in working order	119.3 tons (five engines)
	126.25 tons (five engines)
Wheel arrangement	4-8-2
Tractive effort	30,685 lb.
Length over buffers	69 ft. 3½ ins.
Large tender -	
coal	140 cwt.
water	5,000 gals.
Small tender -	
coal	180 cwt.
water	3,500 gals.
Number in service	large tender - 5
	small tender - 5
Vacuum brake on tender.	
Steam brake on engine.	

Written by G.R. Watson from information in various Westrail publications.



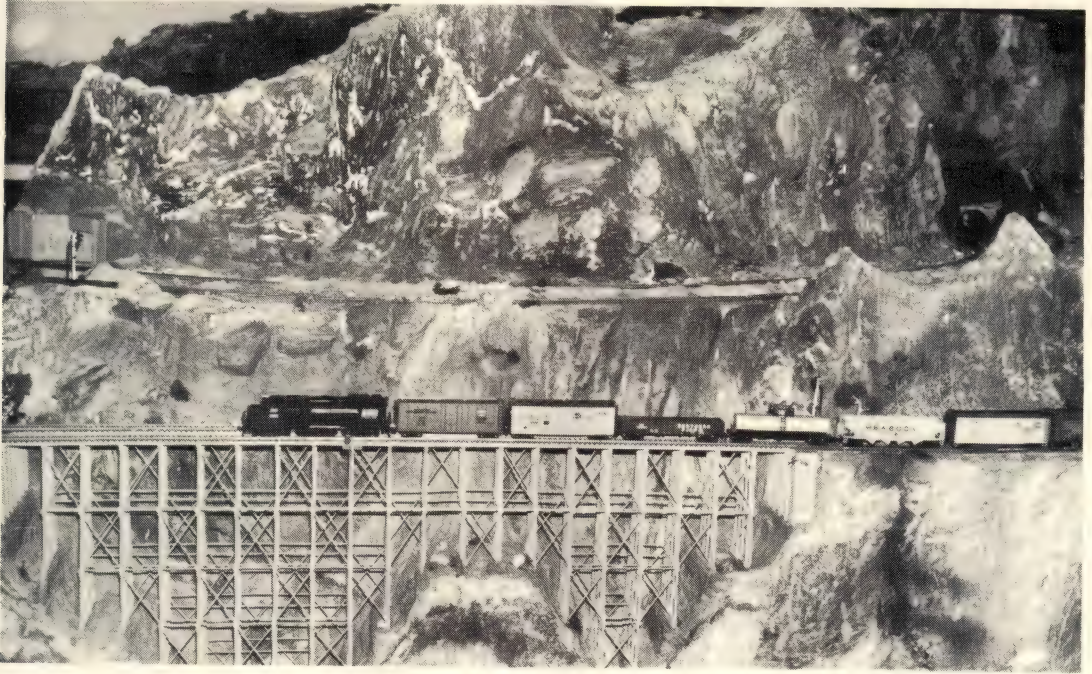
Entries in the AMRA Competition 1974 against background scenery by John Dunn.
M40 loco by Cedric Rolfe, Water Gin by Graham Ball, Cattle Wagons by Phil.
Larmour and Jack Parker, Bogie Cattle Wagon by Alan Dunkey, CHO Guardsvan by
Kevin Brown.

Photo - Jack Parker



Entries in the AMRA Competition 1974 against background scenery by John Dunn.
79 class loco by Jeff Moonie. TE flat wagon by Graham Ball.
CHO guardsvan by Kevin Brown.

Photo - Jack Parker



With towering mountain peaks above, and deep chasms below, the Penn Central GP 35 (by Rachman) leads its train onto a very high trestle, with its slender bents belying its strength and stability.
(A scene on the West Aust. Model Railway Club layout.) Photo G. Watson.



With its train of shorty ore hoppers snaking around every curve, the O-6-OT is making the most of one of the few level stretches in the entire run.
(A scene on the West Aust. Model Railway Club layout.) Photo G. Watson.

ONE DAY, OR A DREAM TO COME

By Frank Peck.

Christmas 1964 I had bought my son Gary a Hornby 4-6-2 for £9.0.0. That was the start of it.

I had lived on the railway all my life up till the time I was married. If there are any old railway men reading this they may remember my step father, Ted Kennedy, he is over 80 now. In October 1965 I was in town buying some track, and when walking back to the Town Hall I noticed the sign for the Train Exhibition. In I went and found that there were other people like me that were interested in trains, so I joined up myself and son.

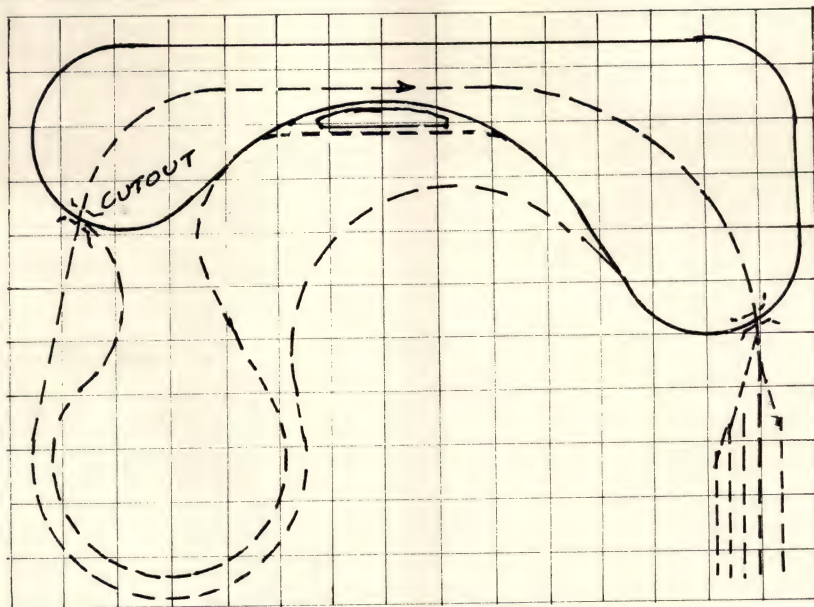
We built a shed 15' by 10' and mixed the cement by hand for the floor, such is the enthusiasm of train buffs. Then we started on the layout which I suppose you could call a dog bone with one straight high side. The only trouble was, that if a train was stopped on the curve it didn't, it just kept right on down with all drivers locked. We pulled part of it down and extended it the full width of the shed with a left curve and an "S" bend, which fixed that. My son did the scenery, and, I think, did a good job of it.

I managed to scrape enough together, although the wife wanted a new dress, to buy a C38 for £25.0.0. Though it looked good it did not work very well. My son took it to one of the Exhibitions, but it had to be withdrawn because of shorts. I have now had it for about 11 years and it has had only a couple of hours running. Finally I found the trouble, I think, but when I went to test it the connection between the motor and the gear broke, so now it is waiting till I get time to have another go. My son joined the Navy and that left me to run the empire.

Soon after my son left I pulled down my shed, loaded it on a lorry and went to live with my daughter. She didn't have enough room, so I had to build a bedroom and bathroom for myself and son Adrian. All this time my shed was laying in a heap in the back yard. Well, I finally got around to building it again and made another layout. I wasn't happy with the new layout, as I had to walk right around if anything went wrong, or wanted to get to things, so I decided to add another 10' to the shed. I was unable to build onto the layout as my daughter's Aunt had to move, and where else to store her furniture but in my new extension. I'm very big hearted. Well I finally got rid of the furniture and decided to add another 6' onto the shed and line it.

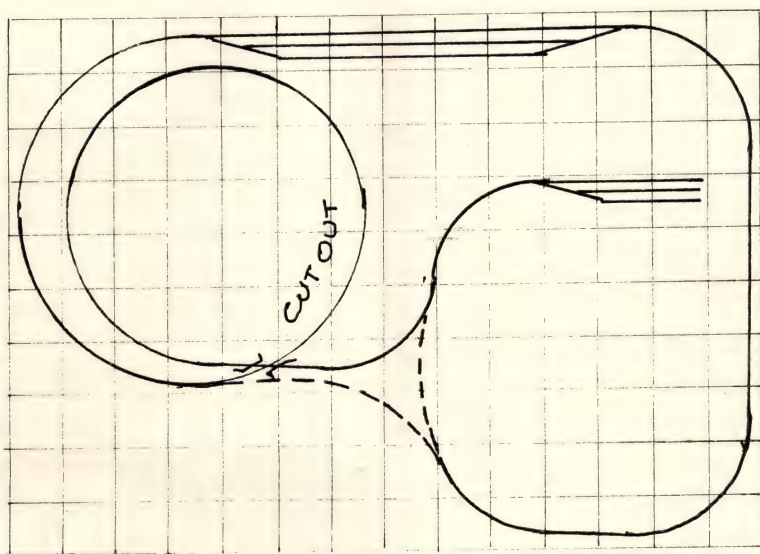
In between all this I managed to buy a C32, a 50 class goods, two C30 tanks, two Z 19's, two C36's, a tin hare and trailer, and a 44. I also purchased two AD 60 Garratts which I missed out on the first time, as I did not have enough to buy a cup of coffee, but now only having myself and the two kids to keep, I have all the money I want to buy trains. The C32 is a good puller though a bit noisy, the 50 wouldn't pull the hat off your head, the C30's are OK., and although I have read that some people are having trouble with the bogies shorting, I have not found that so with mine.

The Z 19's are pearls and I think my favourite the C36's, one round and one square fire box, are very good engines all round. I have not had a bit of trouble with them, other than the tender bogies derailing, but I fixed that by taking the spring away from under the King Pins. The AD 60's are good, but at present one is waiting



FIRST LAYOUT

---Extension



SECOND LAYOUT

----Alteration

repairs as it had lost a coupling between the boiler and coal tender and I cannot find it. I do not like the 44 as it has rubber tyres which keep coming off and it needs a lot of weight somewhere.

Well to get back to the layout, what layout? ah yes, I got rid of that one. I had not stopped drawing plans, and had come up with one where I could get at everything with very little trouble. Leave the centre clear, now why hadn't I thought of that before? I have a maximum width of 3' so that I can reach everything. I started to build, and got part of the frame work up, a station built, and some track layed which I am putting on peco track base.

Stop! We want a swimming pool, so the layout has gone into cold storage again. It has taken four months what with the rain and heat, but they were swimming in it by Christmas.

While in California I picked up an engine for \$24.00 U.S., which is about \$15.00 Aust. at a hobbyshop that claims to have trains and nothing but trains.

He had a big shop with plenty of space, but he didn't seem to be very busy. When I go into our shops, I either cannot get near the counter, or have to wait ages to get served. When I got back to Australia I butchered it and made a 59 class Makado.

My rolling stock consisted of 20 S, 20 LCH, 1 BCW, 2 LLV, 1 UME, 1 LHG, 1 SHG, 1 PHG, 6 CW, 2 LFW, 3 FS, 3 BS, 1 LFX, HFN, BN, FN, FN, BN, HFN, steel passenger cars, 8 end loaders, LBB, LFA, HLF, suburban cars, 4BS coaches, 2 EHO passenger brakevans (1 mailvan), and 6 TAM sleeping cars from workshop 5.

Berg's have been promising a 57 class goods loco for four years now, and I have been waiting for longer than that for some one to put them on the market. I only hope the 57 doesn't come to light while I am away. The layout will have to go into cold storage for 3 months until I get back.

I am at present building 6 ballast wagons out of nickel silver. I don't like it much and would prefer copper. I may be able to have another go at the layout when I finish building a cubby house. I hope someday to be able to finish my present layout, as I have been stock-piling bits and pieces for about 6 years now. Perhaps after I come back from my holiday I might have some interesting developments to write about.

TOOLS AND THEIR USES

Some unofficial definitions, from the Army Apprentices School.

ADJUSTABLE SPANNER: A very useful tool, mainly used on small brass nuts, which then assume a circular contour.

BRASS DRIFT: Used for punching round the large nuts on wheel hubs. Delivers a good supply of brass chippings to the bearings.

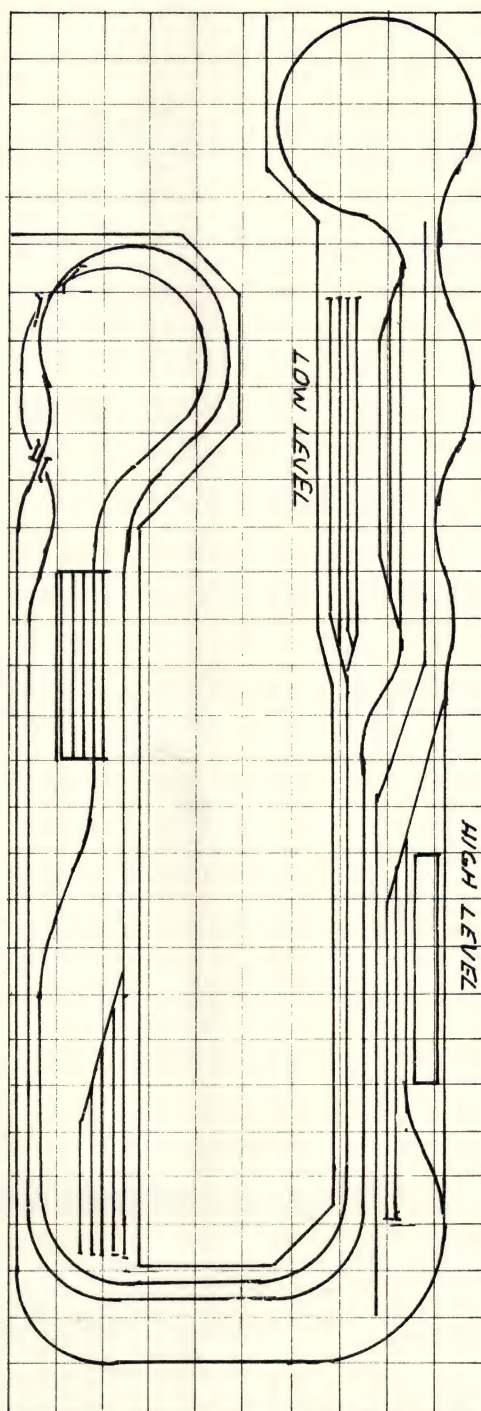
CALIPERS (OUTSIDE): Used for picking small pieces out of inaccessible places.

CENTRE PUNCH: Used for marking other people's spoons, forks, and knives with the three dots which you claim for your own mark of ownership.

COLD CHISEL: May be used for the removal of magneto points and gaskets. Usually used in conjunction with a large hammer. If you find that you strike your hand with the hammer, the easiest way of preventing this is to grasp the hammer with both hands.

ELECTRIC DRILL (HAND): For altering speedometers rapidly to agree with work tickets.

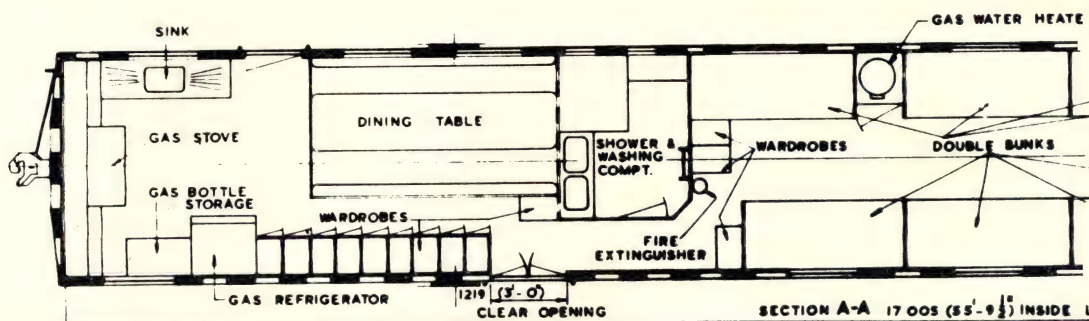
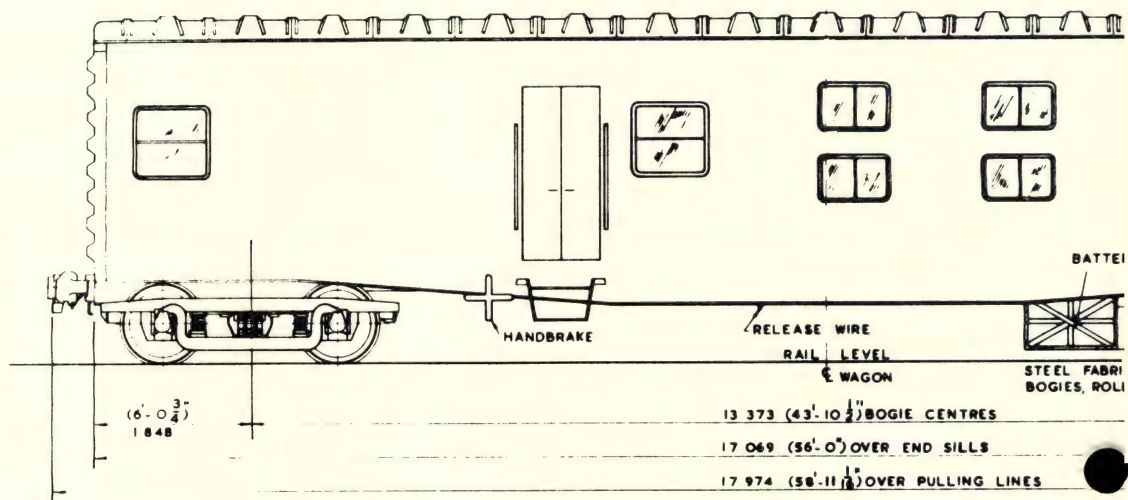
FOOTPRINTS: Work well as a primitive lathe; for removing hexagons from nuts.



THIRD LAYOUT

Not yet completed

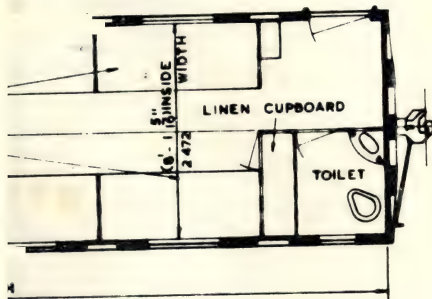
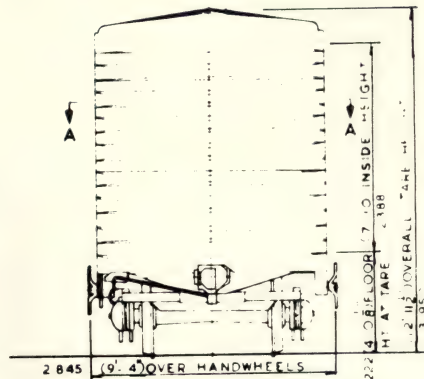
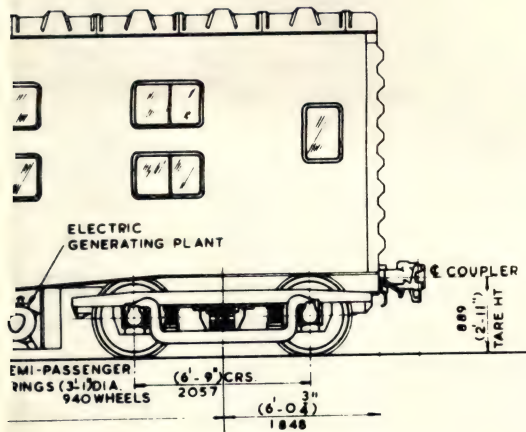
Z
9/77.



Printed with permission of the West Australian Government Railways. This permission is restricted to publication only in the AMRA Journal and the drawings cannot be reproduced for subsequent use.



S-24



BODY ARRGT	DRG No 52649
U/FRAME ARRGT	DRG No 51895
BOGIES 4' 6 1/2" GAUGE	DRG No 51672
JOURNAL SIZE	9" X 5" EQUIVALENT
WEIGHT ON RAIL	(33 T - 11C - 2Q) 34 114 kg
TARE	(31 T - 11C - 2Q) 32 082 kg
LOAD	(2 T - OC - OQ) 2 032 kg
AIR BRAKE	WESTINGHOUSE (WF2)
BRAKE CYLINDER	12" DIA X 12" STROKE
BRAKE % AIR (EQUIVALENT CAST IRON)	TARE 79.6 % LOAD 74.9 %
BRAKE % HAND (EQUIVALENT CAST IRON)	TARE 63.4 % LOAD 59.7 %
EMPTY/LOAD BRAKE	No
GRADE CONTROL	No

NOTE METRIC EQUIVALENTS
SHOWN TO NEAREST MILLIMETRE
AND KILOGRAM

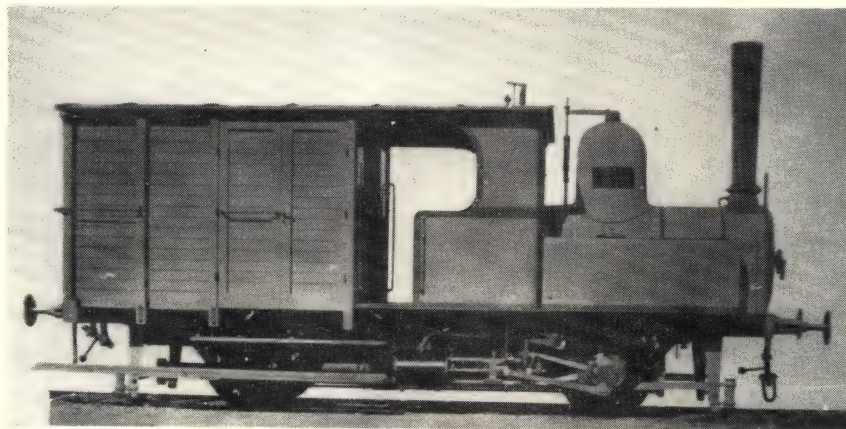
DAG No 19W/5300

WAGR	
CLASS	WSW
CREW LIVING VAN	

Scratchbuilding for very beginners

(Motive power)

By I.M. Laszlo.



This article is a call to arms. I have been scratch-building over the last 20 odd years, and although my concoctions are not of museum quality (or Tim Dunlop Cup quality) I feel that if I can do it, so can you, - yes YOU.

The main purpose this time, is to inveigle you into starting scratch-building, and get off from the ready-to-run run, and have some fun.

You may say that scratch-building is for others, not for you, because it needs a workshop, a lathe preferably, specialised tools, etc. This is definitely not so. You may argue back that although you have heard that people can make absolute masterpieces on kitchen tables (when the household deities are not looking) it is still not for you, because(excuses 1, 2, and 3 are coming up). I will attempt to show a way of scratch-building that is for you too.

This is the suggestion: I want three pieces of motive power to be built. In each case, I will go ahead after you who read this publication have thrashed out, in a priority vote sense, which of

the three appeals to you most, and for which you have a base. The term "base" will be explained in a moment. As my interests are Continental, European of the 1860 - 1890 period, you may not agree with my choices. The basic principles of scratch-building remain the same, and you can build something else if you wish.

The three models are such that they will have a bit of a challenge in them, but you are sure that they will move on their own wheels. In fact, you are sure of that before you even start. I can guarantee you that much!

The three choices, on which you are being asked to vote, are such that there were probably counterparts in Australia. If there were not, then too bad. Each of these pieces of motive power are such that they will be fully prototypical with two or three four wheelers!

1. An Elbel steam railmotor - see photo. I have a plan 1 to 50 scale, which is just a bit smaller than O gauge. There were about 25 of these railmotors built, half loco, half guardsvan, with

a wheel arrangement 2-2 or A1. They were built with varying frame lengths, and the fixed wheelbase (the distance between the driven axle and the trailing axle) varied between 43 and 48mm in HO. The side tanks were of different lengths and shapes, and the smoke stacks or chimneys were also different according to the wishes of the ordering company. In other words, anything goes. There is one catch though, the driven axle is in an outside frame, but we will solve that question when we come to it.

These tiny locos were used on branch lines, with one passenger carriage and two goods trucks, or vice versa. The total loading may have been at the most three four wheelers. The guards van is on the loco, it is the rear half of it. Where do you get it? You may have the base already!

2. A Rail Motor or Tin Hare. This one was made by a famous (but unknown in Australia) loco works from the mid 1920's on. It was made in petrol or diesel forms, and some are still running. There were ancestors running with steam. A steam railcar! It had a gear drive from a small vertical boiler (De Dion system) and the only external difference was the chimney. Internally the difference was in the drivers cabin fittings. It had no motion, but you can put in a motion if you wish, as you will be shown how to do it.

3. A Steam Tram Loco. Now this can be made with or without motion, with or without skirtboards (to cover the motion - what are skirts for - to cover.) There were hundreds of these designs, some go by the name "Plantation Loco", and some were running in cities providing services before electric trams. Although I can provide a few drawings they are for information only. You can hook a bogie carriage or a four wheeler or two on to the last two, and then you may have something that in brass would cost the mint.

All you need is the base and a few tools. The base (at least I call it a base) is a motor bogie, either an old

one or a new one, preferably low slung where the motor does not rise up too high. A motor bogie is a good base for the steam tram (a fixed axle centre of even 30mm is enough) and if you have an old N gauge or TT gauge bogie then it is possible to use it on HO also.

The tools that I would suggest are as follows: A Stanley slimknife (not the big fat one) with one of each blades, a set of jeweller's screwdrivers, an Xacto razor saw, a mitre cutter (which you can make from odds & ends) and the other odd tools you might have about the house. Of course if you have a Unimat or a Moto-tool, it would be helpful, but you can get by without them.

Raw materials: After trying thin polystyrene, I came to the conclusion that it is useful, but there are better materials such as millimeter ply. This can be obtained from hobby shops, but it is costly. A similar material is used by caravan repairers, and is called thin marine ply. It is used to keep the weight down, and you should be able to obtain scraps from them. I found this three ply very useful. It is Australian made and about 1.2mm thick, it gives a carriage a much better feel than polystyrene. You should have 5 minute epoxy, white glue, and another couple of discoveries of mine - Repco-Woodhill muffler paste, and muffler putty. Both these last two are very useful and inexpensive.

When you make a choice (by your votes to the Editor) then we can make a start. I will build one also and my misadventures will appear in print. Your comments in helping to solve the problems will also appear in Journal.

This is planned to be a co-operative venture, and we will end up with a number of somethings that will be so useful on the layout. What is more, YOU (and I) will have made it. Do not worry that it is not a certain prototype, if you want to find a prototype to something it was probably somewhere. My

thoughts are that the El Ferrocarril de Peru must have had one - prove otherwise! Or else the Ottoman Railway before World War 1, or the New England Railway, connecting Tamworth with Taree. Your own company is always broke, and rolling stock to provide services must come from sources other than brand new. This is the reality, and it was ever so. Even the big ones did not disdain to

get second hand rolling stock.

If the Editor does not hear from you, the project will not go ahead. Your vote means, that all of us who are interested will start on the thing most voted for, and have the headaches jointly and separately. Give it a go. This is life, it can be fun! Life; be in it!

THE ST. ERICS MODEL RAILWAY SYSTEM

By Eric G. Watson.

DEVELOPING IDEAS— PART C.

We need to consider the effect of introducing an idea onto a layout. Sometimes the effect can be quite horrid. For example I transferred an attractive building to another area - and it looked awful - quite out of place. The reason being that once considered in relation to the area, I realised no one would build (in real life) such a building there, or conduct such a business. A decrepit fish and chip shop, milk bar, or Deli. if you live in South Australia!! That's about all, not an attractive hardware store. Many ideas developed start off as a problem. One section of the baseboard was too narrow. A 6" x 3" bit could have been nailed on easily, but that's a lousy way to treat a really posh New Type Baseboard (not a new design).

So what would be the effect of widening the whole section? In most of these things all you need to do is stand back, look, and use a bit of imagination.

With scenery in place a 3" or 4" strip would require a road to be added, leaving no scope to do much. Not a particularly worthwhile effect. If the scenery was moved forward a few paddocks could be added, plus of course

it sorted out the awkward corner. Not bad. So I worked out how I could develop the idea of widening the baseboard, and did it. Put in the paddocks, animals and trees. Not much good, added a few finer touches - not bad at all. Needed a name, and finally I got it. "St. Amra Stud" home of "Journal Boy" the world renowned stallion.

Now I looked at the next section, what effect would that have? Very beneficial, for it would, by being wider, allow for a greater range of bits and ideas. So that was widened.

Didn't worry about the third section as I wanted one section done to take photos. This was widened to get the job done while on holidays. A 5' x 1' area. A rare opportunity to develop such an area as one scene. A city, a historic park, a large stud complete with stables, small running track etc.

But the thing is not to rush in. Study the area, study the ideas, work out plans, and select the one you can do, and do it by the method you can achieve the best results with. Avoid at all costs the ways that are beyond you, that's the way to get discouraged, to the point you won't try anything.

AUSTRALIAN MODEL RAILWAY ASSOCIATION FEDERAL COMMITTEE OF MANAGEMENT

STATEMENT OF RECEIPTS AND EXPENDITURE FOR THE YEAR ENDED 30TH JUNE 1976.

RECEIPTS

Cash at Bank - 30/6/75					1,700.00
Petty Cash on hand 30/6/75					223.04
New members' subscriptions					621.90
Membership renewals					76.20
A.M.R.A. Journal subscriptions					413.34
Joining fees					40.05
Sale of badges and accessories					43.36
Donations					104.00
Advertising in Journal					110.45
Sale of Guides					50.00
Refund on trophies					61.98
					20.19
					2,632.24
					180.00
					\$6,276.75

STATEMENT OF FUNDS AT 30TH JUNE 1976

2,632.24

Commonwealth Trading Bank, Punchbowl, N.S.W.

Current Account as above

Commonwealth Savings Bank, Punchbowl, N.S.W.

Interstate Branch's Account

Reserve Account

Sydney Permanent Building Society Investment

Balance at 30th June, 1975

Interest credited November, 1975

Interest credited May, 1976

Balance at 30th June, 1976

Petty Cash on hand, as above

AUDITORS REPORT

I have examined the books and records of the Federal Committee of the Australian Model Railway Association and report that in my opinion the above statement is a true and fair record of receipts and payments during the year ended 30th June, 1976, and of cash funds on hand at that date.

(signed) Robert W. Gorrell, F.C.A.
Honorary Auditor.

6th April, 1977



S 308 and DRC 41 cross at Gordon Station.

Photo by Bob Edwards.



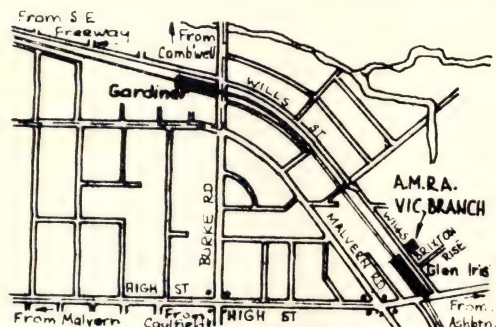
1307 shunting at Clyde Wagon Works, October, 1971.

Photo by J. Parker.

BRANCH NOTES

VICTORIAN

BRANCH NOTES



General meetings are held on the second Thursday each month, commencing at 8 p.m. at the clubrooms 92 Wills Street, Glen Iris. The clubrooms are open from 7.30 p.m. on these nights for operation of your H.O. or N gauge trains on the club layouts. Working bees with some operation on the layout are held each Wednesday night with the exception of the Wednesday night before the general meeting.

We have for sale a number of items of Marklin HO Continental locomotives and rolling stock and if any members are interested, details and prices are available from the undersigned upon request.

The preliminary planning of the 1978 Exhibition to be held over the weekend 10th-13th March at Camberwell Civic Centre is well in hand, and at this stage organiser R.H. (Bob) Edwards has allocated all available floor space to exhibitors. At a later date a request for volunteers to staff the exhibition will be made, so please make a note to keep these dates free.

The Agenda items are as follows:
13th Oct. Open Forum Night. (General Meeting) - Hints, tips and queries.

23rd Oct. Rail Trip - Korumburra and (Sunday) Coal Creek Museum.

10th Nov. General Meeting. Guest speaker - subject - how to take photographs.
Competition - Photograph of model train.

12th Nov. Saturday Working Bee and barbecue at club rooms.

John J. Harry
Hon. Sec.

QUEENSLAND.

Jimboomba, the little township on the Beaudesert branch, was the venue for our April meeting. John McDicken was the host, and following the discussion of branch business, we had a sneak preview of John's layout, of N.S.W. prototype, which is under construction.

Cec. Wall hosted our May meeting which included the Annual Election of Officers. The following were elected:-

President	Arthur Robinson
Vice President	John McDicken
Secretary	Jim Christie
Treasurer	Arthur Hayes
Branch Reporter	Neil Johnman
Country/Overseas Liaison Officer	Jim Bielby

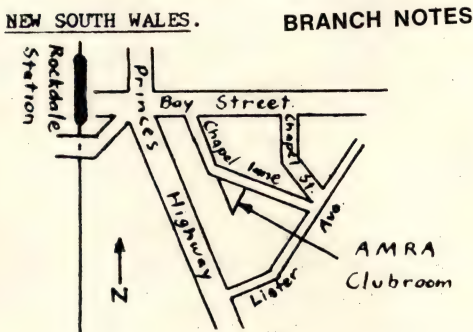
A special merit award was presented to Eric Lyons who has served in A.M.R.A. for many years, most of these as President or Treasurer. Many thanks are extended on behalf of the club to Eric for his many years of service.

Following the branch business Cec. showed us his layout, pointing out his relay system which divides the layout into many separate sections.

At our last modelling night (Thursday 9th June, 1977) Cec gave us a first class talk on relays, pointing out their parts and how they can be used to improve layout operation.

Strathpine was our venue for Sunday 12th June, when we were invited by the Model Experimental Engineers to join them in a running day. Three gauges were in operation - 3", 5" and 7½". Several models were in operation, including a 5" gauge "Lord of the Isles" 3" gauge AC16, 7½" gauge Shay. There are two separate circuits, one carrying 7½" & 5" dual gauge and the other 3" and 5" dual gauge and two aspects signals were in operation for the first time. All those who attended enjoyed the afternoon, particularly when the A.M.R.A. members took a ride around the circuit behind the B18½ and another freelance locomotive. A.M.R.A.'s thanks are extended to the "live steam group" for inviting us out to their running day.

Neil Johnman,
Branch Reporter



Work is progressing on the layouts at Rockdale, mainly by the Wednesday night group. The "O" gauge is really looking good, Norm Read being the guiding force here. The "HO" Tickhole Tunnel, Diaorama style layout, is going ahead satisfactorily, the test run being held on schedule on Friday 24/6/77. The "N" gauge layout has slowed down a little, mainly due to

the effort being put into the Tickhole Tunnel layout. However, the base board and trackbase is complete, and about a third of the track has been laid. We were trying to use the points that we had, but the old layout we dismantled had seven points, six of which were left hand. You would not believe it, but the new layout requires mainly right hand points. That Murphy guy has a lot to answer for!

These Wednesday night meetings provide an interesting phenomenon for those who like to think about the social behaviour of modellers. Although the meetings are basically unscheduled work nights, they have a bigger attendance than some of the regular meetings.

The Branch Annual Dinner was held at Mother's Cellar at Kings Cross on Wednesday 5th July, and was attended by eleven persons including June and Graham Larmour, lately returned from their trip to Europe and South Africa.

On Saturday 17th June we visited the Chullora workshops of the N.S.W.P.T.C. and we were able to examine diesel and electric locos at various stages of repair, including the wreckage of the infamous 4620.

The Model Clinics are continuing although attendances could be much better. On Friday 10th June, J. Parker gave a talk and demonstration of photographing models. Notes were prepared for this clinic outlining the basic photographic method. If anyone would like a copy, send a 9" by 4" S.A.E. to A.M.R.A., N.S.W. Branch, P.O. Box 194, Rockdale, 2216.

On Friday 8th July several members built transistor throttles under the guidance of Bob Wardrop or at least the intention was to build transistor-throttles even though a couple of them nearly turned out to be smoke units. But seriously, Bob's lucid explanation of permanent magnet motors, of transistors and their associated circuitry, was tremendous.

The clinic meetings are worthy of much larger attendances than they are now getting. A few years ago we had

trouble finding places for all the participants to work. We would particularly like to see more of our younger members attending, but only a couple seem interested. The youngsters much prefer layout operation meetings.

On previous series of modelling clinics, some people commented that they found it rather discouraging to find the next project starting, when they had only just finished the previous one. Accordingly, for this series we asked all modellers not to work on their clinic project at home, but to bring it to the next meeting at the same stage as it left the last. We now get comments that it's discouraging to have finished a project and to have to delay the next project till the slower workers have caught up!

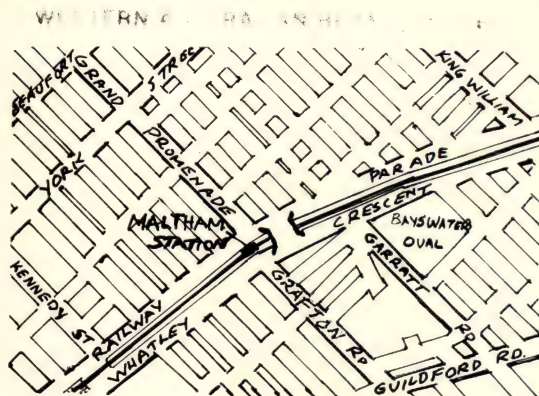
These problems can be avoided, of course, by making projects a one night stand, but this does rather limit the possibilities.

Your branch reporter has to admit that he tends to sympathise with the faster workers. I don't think it is fair, desirable or even possible, to have them work at the same rate of progress as the slower members of the group. Anyway, this discussion might be purely academic soon, if the attendances don't pick up.

This years exhibition will be held at the Sydney Lower Town Hall on October 1st, 2nd and 3rd. As this is the 21st year of the NSW Branch, a celebration dinner will be held on Saturday 1st October, after the exhibition. More details from Denis Meredith later.

The branch took part in the 1977 Rockdale Arts and Crafts Exhibition, held at the Rockdale Town Hall. The exhibition lasted a full week and we are grateful to Col Shepherd and Norm Read for representing us with their "O" gauge layout. Many new contacts were made and experience gained.

Jack Parker.



Visitors and prospective members of A.M.R.A. are always welcome at any of our meetings. Anyone interested can write or phone the Secretary for further information:—

Mr. Jack Eagles,
26 Swan Road,

Phone: 60 5005

High Wycombe, W.A. 6057.

Despite what you read in the last Journal concerning our building, West rail have terminated our lease on No. 1 Beaufort St. and we have to vacate the premises by 31st July.

However, Westrail have offered us the lease on the rooms on Meltham Station at a similar cost to our present building. Your committee has decided to accept this offer and so we officially take up the lease on the 1st August. As we have access to the new rooms, we plan to shift our goods and chattles to them on the weekend of the 23rd and 24th July.

Meltham Station is an island station with two buildings upon it, in which we have three rooms, all being of a larger size than the rooms at No. 1. The station also has of course, toilet facilities and ample parking for your cars, and is easily accessible from all parts of the metropolitan area.

The gaining of these rooms has solved the major problem confronting the branch and should solve our accommodation problem for a number of years, so our Branch can continue to grow, and prosper.

In response to requests your Committee have made a change in the sequence of meetings and their content.

In place of the Monday, Saturday, Wednesday sequence of the past year, the program will now contain one "major" event (i.e. visiting speaker, clinic, etc.) on the first Monday of each month, other meetings will continue to be on Mondays, Wednesdays and Saturdays. "Minor" events (i.e. slide night, tree making etc.) will be programmed on these other days. Your comments on this new format would be appreciated by any committee member.

Your Committee elected at the A.G.M. is as follows:

President	Ted Thoday	57 4256
Vice President	Tony Gray	
Secretary	Terry Watts	25 5555
Treasurer	Ian Randall	46 5448
Committee	Simon Mead	76 8745
	Jack Eagles	60 5005
	Peter Grout	46 1852
	Graham Watson	60 5974

Graham Watson.

REPRINT FROM THE FINANCIAL REVIEW, 1-11-76.

Last week, readers will recall, Pierpoint pledged that in future he would talk about companies in terms of their emotive appeal rather than their financial condition.

No sooner was the ink dry on these pearls of wisdom than the mailman delivered a truly emotive prospectus.

It was for the issue of 250,000 £1 shares in the Romney, Hythe and Dymchurch Railway Limited.

This is a little fairytale railway which runs 14 miles along the Kentish coast from Hythe to Dungeness.

With locomotives only four feet high and a track gauge of 15 inches (that's right, 15 inches), it is the longest small railway in the world.

As such, it is an issue which must have instant appeal for any investor who ever cherished a Hornby train set.

From Pierpoint's cursory glance at the figures, the company made a profit of £4,816 in 1975, but there is room to be sceptical about whether there has been sufficient depreciation provided on the £262,749 worth of fixed assets.

But who cares whether the company ever makes a profit? There is one shareholder benefit which makes all dividends irrelevant.

Anyone who holds between 100 and 499 shares in the company gets a free travel pass, and if his holding is between 500 and 4,999 shares the pass includes his family.

And - this is the real joy - if you hold 5,000 shares or more you can hire a whole train for free once a year.

Now that sterling has been devalued a bit, it would be worth £5,000 just to take an annual ride across Romney Marsh on your own train.

If anyone is interested in subscribing, contact A.F. Ure, 363 Pitt St., Sydney, 2000.

Mr. Ure has a particular affection for the line because (and only now it can be told) he spent the Battle of Britain engaged in the vital task of guarding the Hythe railway station.

Pierpoint has no data on the subject, but he imagines Winston Churchill used to lie awake at night worrying about it.

(For the benefit of Vic. Branch members, I have a copy of the prospectus.

Rex Little, Editor)

HONOURARY LIFE MEMBERS.

Tim Dunlop	Cedric Rolfe
Margaret Dunlop	Faith Dean
Alan Wilson	Ernie Dean
Rick Richardson	Norm Read
Arthur Harrold	Rex Little
Jack Treseder	Maurie McKinnon

News from other clubs

NEPEAN SUB BRANCH NEWS.

The Sub-branch is proud to announce that we have now moved into the first stage of our permanent clubrooms, a building 30 ft.x 20 ft., located at Londonderry Road, Londonderry. As soon as funds permit, we intend to add another building of similar size which will give us a good size meeting and work area.

Our activities for the remainder of the year will be mainly concentrated on layout construction.

Preparations are now in hand for our Annual Exhibition to be held at Warrimoo Citizen's Hall on the Australia Day Weekend at the end of January 1978.

Anyone interested in visiting our clubrooms or exhibiting in our Exhibition are requested to ring me on, 622 5597 after 6.30 p.m., for further details.

Keith Wilcox.
Hon. Sec.

Canberra Model Railway Club.

Canberra Model Railway Exhibition.
Malkara School, Wisdom Street, Garran,
A.C.T.
Saturday 6th - Sunday 7th August, 1977

GRAND RAILWAY MODEL-BUILDING CONTEST OPEN TO THE PUBLIC.

Anybody, any scale, any gauge, - no entry fee.

<u>Individual Categories.</u>	<u>Prize</u>
A Scratch-built locomotives and self-propelled vehicles.	Cup
B Kit-built or kit-bashed locomotives and self-propelled vehicles.	Cup
C Scratch-built rolling stock.	Cup
D Kit-built or kit-bashed rolling stock.	Cup
E Railway and lineside structures.	Cup

F Detailing and finishing.	Cup
G Diorama of a railway scene.	Cup
H Best layout on display.	Cup

Championship Sections.

J Best in Show - Juniors	Book
K Favourite model (as judged by the public in the voting book).	Cup
L The Dick Hinder Memorial Prize for improvers.	Cup & Trophy
M Grand Championship - Best model in the 1977 show.	Cup & Trophy

General Rules.

- 1 Deliver your models personally or by agent from noon, 6th August.
- 2 Contest closes for judging at 3 p.m. 6th August, 1977.
- 3 Models held for display until 4 p.m. 7th August, 1977.
- 4 The Exhibition Committee retains the right to accept or reject any entry. The judges decision is final and binding.
- 5 Amended US NMRA rules apply to judging. See voting book for voting rules applicable to Section K.
- 6 You may enter the same model in more than one appropriate section, e.g. a building in E/F or E/G and win more than one prize with it.
- 7 A model that has previously won a first prize at any capital city show is ineligible for this contest.
- 8 Jointly-produced entries are acceptable, e.g. a locomotive's builder could enter his work in Section A, and its painter in Section G. Father and son entries are also acceptable; declare full details when registering.
- 9 Professional work (i.e. done for gain) is ineligible.

For the Exhibition Committee,
Ian Macfarlane, Contest Convenor,
36 James Street,
Curtin. A.C.T. 2605.



To a backdrop of Victorian and Colonial style buildings, a four wheel tram racks its way along a street in Bendigo, December, 1970.

Photo J. Parker.

WESTRAIL CENTRE



Reprint from "Westrail", Vol. 12 No. 1
the newsletter of the W.A.G.R.

On Friday 12th November 1976, the Premier of Western Australia opened the \$9.5 million Westrail Centre, situated in East Perth. Although the official opening took place in November, the building was actually occupied by Westrail's 800 administration staff on Tuesday 12th October.

The culmination of many years of planning, the new building will fulfill two major functions: a new permanent terminal for interstate and intrastate rail and bus passengers, and a combined office building for Westrail's headquarters staff.

The Westrail centre which is principally a brick and concrete structure provides passenger facilities at ground and mezzanine levels and office accommodation spanning from ground floor level up to the sixth (executive) floor.

A full basement accommodates support facilities and luggage handling.

Generous surrounding land areas will provide ample car parking for staff and patrons in landscaped surroundings. Unlike most major rail terminals the new Perth terminal is set primarily in a residential area, and it was essential to take particular care in architectural design and in the total surrounding environment.

Natural materials have been exploited in design of interior decor with extensive areas of jarrah panelling and coffered ceilings add a singularly West Aust. flavour to the interior decor. In the concourse the off-white marble floor contrasts with lofty bush hammered concrete columns. An imposing steel sculpture based on steam locomotive parts dominates the main circular spine

concealing public conveniences and incorporating facilities for the disabled and nursing mothers.

A shop provides newspapers, books, magazines, quick refreshments and confectionery for the traveller in a hurry. For those with more time there is an exhibition area featuring displays on a variety of subjects or the Westrail Tavern. Here the thirsty can relax with a drink of their choice and the hungry enjoy a meal from the restaurant's wide menu.

A full passenger complement from departing interstate trains can be entertained in the tavern area. The Westrail staff area meets the public on the mezzanine with a staff dining area seating 180 and a smaller adjacent executive dining area. A major second floor feature incorporates a 100 seat theatre-ette, staff amenities area, and centralised staff training facilities.

The remainder of the building, including the ground and first floor areas, provides 12,000 square metres of landscaped office space offering a high standard of accommodation to staff and a flexible investment to the management. The basement includes a new state-wide rail telephone exchange, a centralised reprographics section, modernised luggage handling, maintenance and storage accommodation. The sixth floor, smaller than those below, accommodates the executive and their support staff, and the secretariat. Four high speed lifts link all levels.

Throughout the building, full advantage has been taken to modernise all administrative functions. From the sophisticated typing process centre, to the handling of records, from the ingenious document conveyor system, to security surveillance, the Westrail centre represents the fullest exploitation of contemporary administration planning.

From the exterior of the new building the visitor standing under the nat-

ive eucalyptus beside the last steam locomotive constructed in Western Australia and fully restored, will notice the brick fins which prevent sun penetration into the building. He may also catch a glimpse of the computer room equipment on the second floor, but it is doubtful if he will appreciate the effort that went into laying the two and a half million bricks, hundreds of tonnes of concrete, or laying the massive beams in the floor structure.

The Westrail Centre represents an impressive investment in the future of Western Australia - an investment of both money and ideas.

N-K HOBBIES

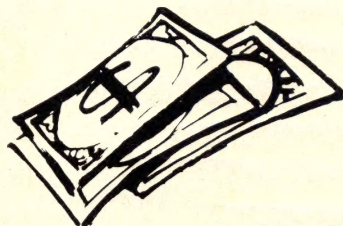
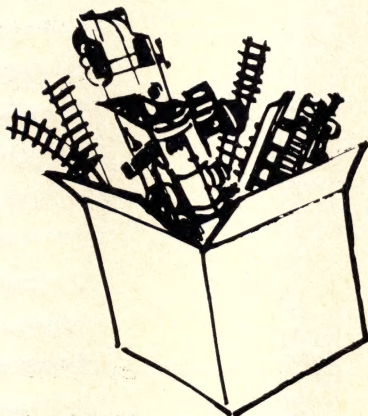
★ ★ ★

*For an ever-increasing
range of model railway
and hobby supplies*

★ ★ ★

**264 BLACKBURN ROAD,
SYNDAL 2332398**

we accept



'HO' to 'N'
'N' to 'HO'
3 rail to 2 rail
B.R. to American
or continental

Trade-ins

(in good condition)

If space is your problem why not change to 'N' Gauge, or if you wish to go scale that toy train may be worth \$\$\$'s on Athern, Round-house, Rivorossi, Kaydee, etc, or a brass locomotive for your mantelpiece — whatever your problem, give us a ring.

Even with the current import shortages of stock, we have a good range of most brands on sale — Don't forget our LAYBY service.

**the
engine
shed**

all the above available from
**5 CARRINGTON
ROAD, BOX HILL,
3128**

Right at the Box
Hill Railway Stn.
and Bus Terminus.
(Southside)

Telephone 89 7027